

**A COMPARATIVE STUDY TO ASSESS THE
EFFECTIVENESS OF SWISS BALL EXERCISE
OVER DRY LAND EXERCISES IN REDUCING
PAIN AND DISCOMFORT AT SPINAL
COLUMN FOR PRIMIPARA MOTHERS**



REGISTER NUMBER: 27091211

**A DISSERTATION SUBMITTED TO
THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY
CHENNAI**

**IN PARTIAL FULFILLMENT FOR THE
REQUIREMENT OF THE DEGREE IN
MASTER OF PHYSIOTHERAPY**

APRIL – 2011

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Head of the Institution: _____

Principal: _____

Dr.R.SHANKER M.P.T. (OG)
TMMF, MADURAI

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Examiners: _____

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CERTIFICATE

This is to certify that the project work entitled, “**A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF SWISS BALL EXERCISE OVER DRY LAND EXERCISES IN REDUCING PAIN AND DISCOMFORT AT SPINAL COLUMN FOR PRIMIPARA MOTHERS**”, was done by **M.VIDHYA DEVI** a bonafide student of Master of Physiotherapy under THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI.

PROJECT GUIDE

**(Prof. R.SHANKER, M.P.T. (OG.)
TMMF, MADURAI**

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I first thank **LORD** and my parents for the confidence they have given throughout my life. I humbly acknowledge all the love and care showed by my parents throughout my life in making me what I am.

I respectfully thank our correspondent **Prof.K.R.ARUMUGAM** for his support and guidance for the successful completion of my project. I wish to convey my sincere regards to Principal **Dr.R.SHANKER M.P.T. (O.G.)**.

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I am indebted to all the faculty member of physiotherapy department.

Dr.M. ANANTHA RAJ B.P.T.

Dr.J. SUDHARSAN M.P.T. (CARDIO)

Dr.B. RAMKUMAR M.P.T. (CARDIO)

I also thank librarian **Mr.THIRUNAVUKKARASU** and other library staffs for extending cooperation in utilization of library.

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CONTENTS

S.NO	CONTENT	Page No.
I	INTRODUCTION	1-15
	• Need for the study	4
	• Statement of the problem	4
	• Objectives	4
	• Hypothesis	5
	• Null hypothesis	5
	• Operational definition	6
	• Assumption	6
	• Delimitation	6
	• Anatomy	7 - 9
	• Physiology of pregnancy	10-15
II	REVIEW OF LITERATURE	16-21
III	METHODOLOGY	22-52
	• Research Design	22
	• Setting of the study	22
	• Population sampling	22
	• Sampling method	22
	• Criteria for selection	23
	• Scoring procedure	24-28
	• Data collection procedure	29-41
	• Data analysis	42-52
IV	RESULTS	53
V	DISCUSSION	54
VI	CONCLUSION AND SUGGESTIONS	55
	REFERANCE	56-57
	APPENDIX –I	58-59
	APPENDIX –II	60-62

INTRODUCTION

Pregnancy a single cell grows and develops into a human being capable of independent existence. This process takes place over a period of 40 weeks (9months). Prenatal development is the development of a baby during the period before birth.

Prenatal development has three stages:

- The period of zygote.
- The period of the embryo.
- The period of fetus.

During pregnancy women undergo many postural and biomechanical changes during pregnancy as a result of having to accommodate a growing baby. The spine will experience a forward pulling as your centre of gravity shifts creating pain and discomfort at the spinal growth.

The low back pain is one of the most frequent problems existing throughout the world. The problem of back pain in pregnancy has attracted attention of clinicians and researches from all over the world.

The exercise ball is an exercise treatment option for back pain sufferers and it is designed to help to reduce low back pain. Exercise ball or Swiss ball or physio ball help to strengthen core body muscle, stabilize the spine and enhance proprioception.

This Swiss ball exercise provides the body with increased balance and stability. It helps to reduce pain by stimulating the body to produce increased amounts of natural pain inhibitors.

Dry land exercise helps to increase body temperature to rise metabolism to provide energy. It helps to improve strength and stability of the core muscle.

Back pain in pregnant women is a very common complaint. In fact, as many as 80% of pregnant women will have back pain at some time during their pregnancy. There are several types of back pain that occur among expectant mothers, but low back pain is the most common. Backache can occur for a number of reasons, which can be reduced to two main issues: hormones and postural changes.

During pregnancy, your body produces a veritable cocktail of hormones. Among these is a hormone called relaxing. The primary role of relaxing is to loosen the joints and ligaments in your body in order to help them stretch and widen. This allows your body to more easily make room for your baby inside of your pelvis. And, when the time comes for your baby to be born, the hormone relaxing will have helped the joints of your pelvis relax and stretch enough for your baby's shoulders to pass through your pelvic bones.

What does all that have to do with lower back pain? Well, unfortunately, your body is unable to isolate which ligaments and joints will stretch and loosen, and this happens on a broad scale throughout your body. As the ligaments and muscles which normally support your spine become lax, it can result in some instability in the spine, which can result in aching and discomfort.

As your uterus expands and your baby grows, it also causes immense changes in your posture, which can result in aching. As your abdomen and uterus stretch, it puts a greater strain on your back muscles.

NEED FOR THE STUDY :

1. To reduce the pain and discomfort of the spinal column.
2. To explain the importance of dry land exercise in prenatal period.
3. To explain the importance of swiss ball exercise in prenatal period.

STATEMENT OF THE STUDY:

A comparative study to assess the effectiveness of swiss ball exercise over dry land exercise in reduce pain and discomfort at spinal column of primipara mothers before and after teaching exercise programme.

OBJECTIVES:

- To reduce the pain and discomfort of the spinal column for primipara mothers.
- To assess the effectiveness of swiss ball exercise over dry land exercise.

HYPOTHESIS :

- There is significant difference in reduce pain and discomfort of the spinal column for primipara mothers after exercise with swiss ball than dry land.
- Experimental group mean the primipara mothers who are doing exercise with swiss ball for reduce pain and discomfort of spinal column.
- Control group means the primipara mothers who are doing exercise with dry land for reduce pain and discomfort of spinal column.

NULL HYPOTHESIS:

- There is no significant change or difference in reduce pain and discomfort of the spinal column for primipara mothers after exercise with swiss ball than dry land
- Experimental group mean the primipara mothers who are doing exercise with swiss ball for reduce pain and discomfort of spinal column.
- Control group means the primipara mothers who are doing exercise with dry land for reduce pain and discomfort of spinal column.

OPERATIONAL DEFINITION:

- Prenatal development is the development of a baby during the period before birth .
- Prenatal development has three stages zygote, embryo, fetus.
- Effectiveness of swiss ball exercise over dry land exercise in reducing pain and discomfort at spinal column .

ASSUMPTION:

- For reducing pain and discomfort at spinal column by swiss ball exercise.
- For reducing pain and discomfort at spinal column by dry land exercise.

DELIMITATION :

- Women who come for delivery in Meenakshi mission hospital and Research centre, Madurai.
- Women who are willing to participate in the exercise program.

ANATOMY OF FEMALE REPRODUCTIVE SYSTEM :

The female reproductive system is designed to carry out several functions. It produces the female egg cells necessary for reproduction, called the ova or oocytes. The system is designed to transport the ova to the site of fertilization. Conception, the fertilization of an egg by a sperm, normally occurs in the fallopian tubes.

The female reproductive anatomy includes internal and external structures.

- **Labia majora:** The labia majora enclose and protect the other external reproductive organs. Literally translated as "large lips," the labia majora are relatively large and fleshy, and are comparable to the scrotum in males.
- **Labia minora:** Literally translated as "small lips," the labia minora can be very small or up to 2 inches wide.
- **Bartholin's glands:** These glands are located next to the vaginal opening and produce a fluid (mucus) secretion.
- **Clitoris:** The two labia minora meet at the clitoris, a small, sensitive protrusion that is comparable to the penis in males.

Reproduction:

In the reproductive process, two kinds of sex cells or gametes are involved. The male sperm, and the female egg or ovum. These two cells meet in the female's reproductive system to create a new individual.

Vagina:

The vaginal wall is a thick, fibromusclar tube that forms the inferior- most region of the female-reproductive tract and measures about 4 inches in length in an adult female. It connects the uterus with the outside of the body anteromedially, and thus functions as a entry point for the penis during sexual intercourse.

Cervix:

The cervix is situated between the vagina and the uterus. It mucous membranes helps to either allow for the passage of sperm or the obstruction of sperm.

Uterus:

This muscular organ is made up of three layers from deep to superficial: endometrium, myometrium, perimetrium.

The Endometrium can be further divided into Stratum Basalis and Stratum Functionalis which is the growth filled with blood and sluffed out on the next menstruation.

Fallopian Tube :

The fallopian tubes extend superiolaterally off the uterus and connects with the ovaries. These tubes have finger like projections called Fimbriae at the end of the tube near the ovary.

Ovaries:

Women have an ovary on each side of the uterus. Each month the ovaries release an egg which is then fertilized or sloughed off. They also produce estrogen and progesterone which help with reproductive function.

PHYSIOLOGY OF PREGNANCY

Prenatal development :

Prenatal development is the development of a baby during the period before birth. An ovum, a female cell or egg is released by one of a woman's ovaries. The egg moves through the fallopian tube to the uterus, duration is two or three days.

The union of an ovum and a sperm resulting in the beginning of pregnancy this union is called zygote. Fertilization is the joining of a sperm and an egg. A sperm is a male gamete that is released into the vagina of a female during intercourse. In order for fertilization to occur there must be a mature ovum present. Every month one of the ovaries releases an egg which will meet one of the 4 million sperm the male ejaculates into the vagina.

Period of zygote:

The first stage in the development of a human baby is called the period of zygote or fertilized egg. It lasts two weeks. Beginning of this period, the embryo has developed to beginning of all organs and body parts, the cells are now recognizable as a developing human arms, legs, fingers and toes are developed.

The thickened lining of uterus provides both a warm and soft bed and food for the fertilized egg. It grows by a process called cell division. This single, complete cell divides and becomes two. Two cells become four and so on, until the mass of cells. The end of two weeks, the zygote is still only the size of a pinhead.

Period of embryo:

Second stage of pregnancy is the period of embryo. The embryo is the developing cluster of cells in the uterus during about the third through eight weeks of pregnancy. The tissue around the unborn baby to the mother's uterus, has developed. The umbilical cord, a long tube that connects the placenta to the unborn baby developed. Nourishment and oxygen from mother's blood stream are carried from the placenta to the developing baby through the umbilical cord.

Period of fetus:

The third and last stage of pregnancy begins about the eighth or ninth week and lasts until birth. This stage is called the fetal period, the period of fetus, unborn baby from about the eighth or ninth week of pregnancy. The beginning of all organs and body parts.

The cells are now recognizable as a developing human . The fetus heart beat can usually be heard before movement is felt. This chapter we will discuss the topics covering pregnancy, from conception to birth. The chapter will cover fertilization, implantation of the zygote, to becoming a fetus, the three trimesters, and the progressive development of the fetus through the weeks of pregnancy. It will cover the topic of birth and different birthing methods.

IMPLANTATION

- The blast cyst preserves itself by secreting a hormone that indirectly stops menstruation. The trophoblast cells secrete hCG hormones that help maintain the corpus luteum that would normally regress. In turn, the corpus luteum continues to secrete progesterone, which maintains the endometrium of the uterus in the secretory phase. This helps the blastocyst to continue to grow and stay embedded within the endometrium. The embryoblast within the blastocyst forms 3 primary germs layers: ectoderm, mesoderm, and endoderm.

EMBRYONIC DEVELOPMENT OF SPECIFIC STAGES

First Trimester

An embryo this tiny shows very distinct anatomic features, including tail, limb buds, heart (which actually protrudes from the chest), eye cups, cornea/lens, brain, and prominent segmentation into somites. The gestational sac is surrounded by a myriad of chorionic villi resembling elongate party balloons.

4 Weeks

- There are only the beginnings of facial features. All the major organs are starting to form. Gill-like folds that develop into facial features, beginnings of the spinal cord, skin is translucent, and rudimentary (basic; minimal) heart develops.

6 Weeks

- The length from crown to rump is about the size of a finger tip, $\frac{3}{4}$ ". The beginnings of all the major organs will have formed.

9 Weeks

- The length from crown to rump approximately 1 1/4". The facial features are becoming more distinct, and the "tail" has disappeared. The muscles are also developing. Eyes are formed but eyelids are still closed over them.
- Heart- is now a four-chambered and fully formed organ; it beats about 180 times per minute.

12 Weeks

- At twelve weeks the fetus looks like a tiny human. It is about 2 1/2" long and weighs 1/2 oz. Arms and legs are now beginning to move. Skin is red and translucent.

Second Trimester

20 Weeks

- By 20 weeks the fetus will be about 6 1/3" long and weighs 12 oz. Movements are for more coordinated.
- The sexual organs are well developed and are usually visible on ultra sound.
- The fetus is growing very quickly.
- At this stage, the mother should feel the movements of the fetus.

Third Trimester

29 Weeks

- By 29 weeks the baby is about 10" long and weighs about 2 lbs. 7 oz.
- The brain grows much larger, and fatty protective sheath covers the nerve fibers; this important development allows brain impulses to travel faster, enhancing the ability to learn. The lungs have developed most of their airways and air sacs.

40 Weeks

- The baby is now ready to be born. When the head of the baby moves down from high in the mother's abdomen and settles deeper into her pelvis in preparation for birth, it is called engagement. This can happen any time between 36 weeks and labor.
- In the last four weeks of pregnancy the baby puts on a lot of weight and develops a thick layer of fat. All organs are completely formed and functioning.

REVIEW OF LITERATURE:

1. The book Moving Through Pregnancy: the Complete Exercise Guide for Today's Woman by Elisabeth D Bing

This (author) is published or distributed by Bobbs-Merrill Co

2. Stability Ball Exercises - Physical Fitness Fun

Mar 26, 2009 Karen Stephenson

Swiss balls, or more commonly referred to as stability balls, are not new. This 50 year old invention is still gaining popularity among those who want to get fit.

3. Reduction of back and posterior pelvic pain in pregnancy.

Spine. 1994; 19:894-900. Ostgaard HC, Zetherstrom G, Roos-Hansson E, Svanberg B. Posterior pelvic pain (PPP) is pain felt at or near the sacroiliac joints of your pelvis as a result of sacroiliac joint dysfunction.

4. REVIEW BRITISH COLUMBIA MEDICAL JOURNAL JULY 2006

Fit to deliver: an innovative prenatal and postpartum fitness program. By karen nordahl, md, carl petersen bpe, bsc(pt), and renee jeffreys, msc. Vancouver: hartley & marks publishers inc., 2005. Isbn 0-88179-208-x. Paperback,163 pages.

This book is written by a physician, a physical therapist, and an exercise physiologist. The stated goal of the book is to “give women the ability to modify their existing fitness program (or, for those new to exercise, to start a program) and to go one step further by offering state-of-the-art training techniques to better prepare for delivery and the postpartum period.”

5. FIT TO DELIVER REVIEWED BY: ROBYN CHURCHILL, CNM, MSN

Fit to Deliver by Karen Nordahl, Renee Jeffreys, and Carl Petersen is a complete guide to maintaining fitness throughout pregnancy. Written by a Canadian physician, an exercise physiologist, and a physical therapist, this book is a timely addition to the layperson’s literature on pregnancy. As our society faces increasing obesity rates and decreasing activity levels among all

ages, addressing questions about how to safely exercise is a public health mandate.

6. DR. KARIN KAUSKY MD

This book covers it all; prenatal and postpartum, beginner to advanced, cardio, strength training, core stability, as well as explaining all of the normal physiologic changes in a woman's body throughout pregnancy. Very concise and easy to read with lots of accompanying photographs.

7. CONTACT MAGAZINE

Carl Petersen (Vancouver, BC) teamed up with Karen Nordahl (MD) and Susi Kerr (personal trainer) to co-author and self publish the book, "**Fit to Deliver**," outlining an exercise program for expecting and new mothers and their babies

8. Exercise and Pregnancy

CANOE.CA FITWISE BY KAREN TANKARD

You're more likely than ever before to run into a pregnant woman engaged in exercise, especially if you're a gym member.

That's because many fitness facilities are developing specialized exercise programs with expectant moms in mind.

9. The Pregnancy Exercise Book by Barbara Dale

This (author) is published or distributed by Pantheon [039471119X, 9780394711195]. This particular edition was published on or around 1982-10-12 date. The Pregnancy Exercise Book has Paperback binding and this format has 128 number of pages of content for use.

10. The book Pregnancy Exercise by Judy Difiore

This (author) is published or distributed by Carroll & Brown This particular edition was published on or around 2006-06-30 date. Pregnancy Exercise has Paperback binding and this format has 74 number of pages of content for use. This book by Judy Difiore is written in English language.

11. The book Exercising Through Your Pregnancy by James F

Clapp, M D Clapp Iii

This (author) is published or distributed by Addicus Books . This particular edition was published on or around 2002-01-31 date.

Exercising Through Your Pregnancy has Paperback binding and this format has 256 number of pages of content for use. This book by James F Clapp, M D Clapp Iii is written in English language.

12. Times New Roman By: Thomas E. Hyde, DC

These exercise balls are constructed of elastic, soft polyvinyl chloride (PVC) and diameters range between 35 – 85cm (14-34”). Most balls are made to take approximately 320 kilograms (about 700lbs). They are used in the fitness industry as well as in physical therapy Core Body Strength Exercises

13. Beginning Exercise Program on an Exercise Ball By: J. Talbot Sellers, DO

Beginning an exercise program with an exercise ball should begin with stretches and learning simple exercise ball routines.

14. Margaret Polden and Jill Mantle :

Physiotherapy in Obstetrics and Gynecology, 1994. Pregnancy a single cell grows and develops into a human being capable of independent existence. This process takes place over a period of 40 weeks (9months). Prenatal development is the development of a baby during the period before birth.

15. Jill Mantle , Jeanette Haslam, Sue Barton :

Physiotherapy in Obstetrics and Gynaecology, 1994.

Pregnancy a single cell grows and develops into a human being capable of independent existence. This process takes place over a period of 40 weeks (9months). Prenatal development is the development of a baby during the period before birth.

RESEARCH METHODOLOGY:

RESEARCH DESIGN:

An experimental pre test, post test and control group research design was chosen to study and to determine the effectiveness of swiss ball exercise for reduce pain and discomfort of spinal column.

An experimental pre test, post test and control group research design was chosen to study and to determine the effectiveness of dry land exercise for reduce pain and discomfort of spinal column.

Setting of the study :

This study was conducted in antenatal period in Meenakshi mission hospital and research centre, Madurai.

Population sample:

The sample of 40 prenatal women were divided into two groups .

10 - Experimental Group.

10 - Control Group.

Sampling method :

Systemic random sampling was done in antenatal wards and every women pregnant for the first time was selected for the study.

Inclusion criteria :

Second trimester of pregnancy .

Age less than 30 years .

Primipara mothers .

Willing to comply with study protocol.

Exclusion criteria:

Bleeding or spotting .

Low placenta .

Threated or recurrent miscarriage.

Previous premature birth .

Weak cervix.

VARIABLE OF THE STUDY :**DEPENDENT VARIABLE :**

Pain .

IN DEPENDENT VARIABLE :

Swiss ball exercise.

Dry land exercise.

MATERIAL USED :

Swiss ball .

METHODOLOGY :

PRE TEST SCORE :

The pre test score for measuring pain is taken with the help of visual analogue scale.

DATA COLLECTION PROCEDURE :

Pilot study was done was done with six subjects after which the study was conducted by fixing validity and reliability criteria.

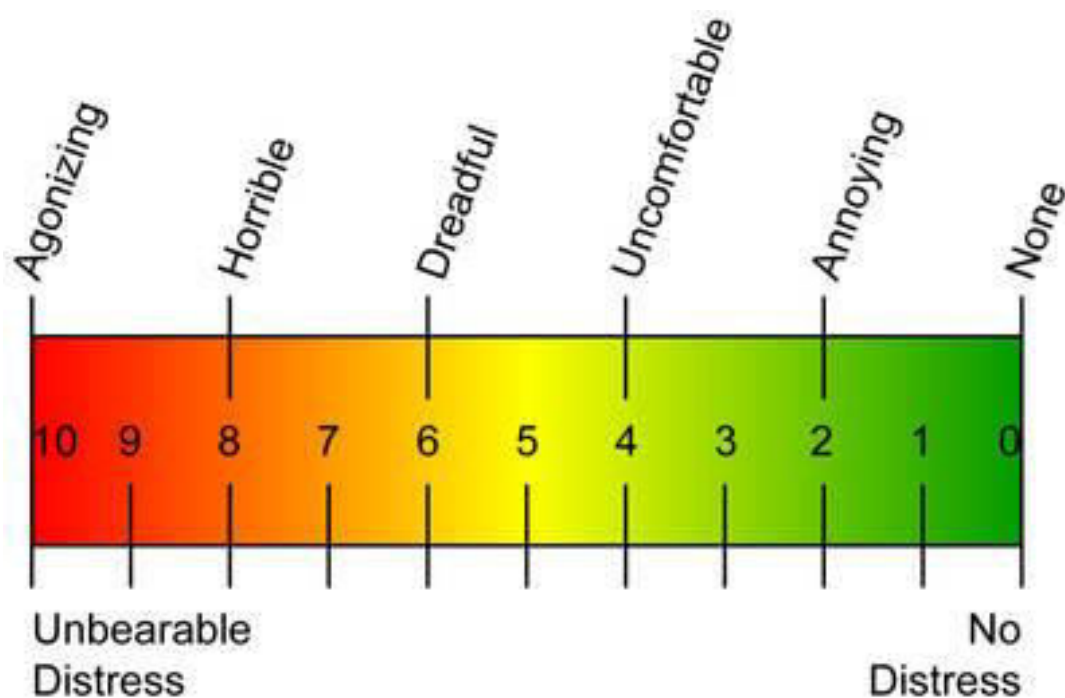
VISUAL ANALOGUE SCALE

Definition:

Pain is defined pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage, according to The International Association for the Study of Pain. It is useful to distinguish between two basic types of pain, acute and chronic, and they differ greatly.

The visual analogue scale is the patients psychological measurement of pain . It consists of an unmarked straight line having two ends . One end indicating no pain and other with maximum pain and the other with minimum pain. The subject were instructed to make a mark on the 10 cm bon segmental horizontal line which represents the level of pain at the time of test .

Then the distance from the left end to the subjects mark was measured in centimeters and recorded .This numerical index of the severity of pain was used as the score. Instruct the patient to point to the position on the line between the faces to indicate how much pain they are currently feeling. The far left end indicates ‘No pain’ and the far right end indicates



Task _____

Date _____ Start _____ End _____

‘Worst pain ever’.

2. QUESTIONARRE SCALE:

This method of data collection is quite popular, particularly in case of big enquiries. It is being adopted by private individuals, research workers, private and public organisation and even by governments . in this method a questionnaire is sent to the persons concerned with a request to answer the questions and return the questionnaire. A questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms.

Questions may be dichotomous (yes or no answers) , multiple choice (alternative answers listed) or open ended. The later type of questions are often difficult to analyse and hence should be avoided in a questionnaire to extent possible. There often difficult to analyse and hence should avoided in questionnaire which indicate the reliability of the responds.

The questions are presented with exactly the same wording and in same responds. The form of question may be stated in advance and not constructed during questioning. Structured questions may have alternative questions is one in which all questions and answers are specified and comments in the respondents own words are held to the minimum. when these characteristic are not present in a questionnaire, it can be termed as unstructured or non structured questionnaire.

Answer the following questions :

1. How you feel during breathing .

A, bad -0 b, good -1 c, better -2

2. How you feel during squating .

A, bad -0 b, good -1 c, better -2

3. How you feel during walking .

A, bad -0 b, good -1 c, better -2

4. How you feel during cross leg sitting .

A, bad -0 b, good -1 c, better -2

5. How you feel during lying on supine .

A, bad -0 b, good -1 c, better -2

6. How you feel during prolonged standing .

A, bad -0 b, good -1 c, better -2

7. How you feel during stair climbing .

A, bad -0 b, good -1 c, better -2

8. How you feel during turning over .

A, bad -0 b, good -1 c, better -2

9. How you feel during passing urine .

A, bad -0 b, good -1 c, better -2

10. How you feel during washing .

A, bad -0 b, good -1 c, better -2.

SWISS BALL EXERCISES

- **SIT ON THE BALL**

- Sit on the ball with your feet flat on the floor about hip-width apart.
- Allow the arms to relax at your sides,
- then slowly raise them and outstretch the fingertips toward the ceiling.
- Slowly lower them to the starting position. This exercise help to tone arm, stomach and core muscle.



The abdominal core muscles play an important role in carrying certain body function . strong abdominal muscles means strong digestive system and improved metabolism. Simply sitting on it can improve your posture, balance and even strengthen stomach muscles.

- **BOUNCE ON THE BALL**

- Sit on the ball.
- Bounce on the ball.
- If possible rotate their hips in a circle.



While in a sitting position, try rhythmically bouncing on the ball to strengthen leg and abdominal muscles (use caution so you don't fall off!). Some women will also rotate their hips in a circle while sitting on the ball to strengthen abdominal muscles.

- **LUNGE EXERCISE**

- Place the ball against a wall and then place the small of your back against the wall.
- Stand with your legs spaced a little further than your hips.
- Extend your left knee (so you're lunging) and hold for 5-10 seconds.
- Return to the start position and then do the same with the right knee.
- Do this for 12-15 reps.
- You could also sit on the ball, with the pelvis tilted back and do the same exercise to strengthen leg muscles and improve balance.



- **BACK EXTENSION WITH BALL EXERCISE:**

- To perform the back extension with ball, lie with the head facing downwards.
- The exercise should be positioned beneath the body (hips)
- Then lift the torso upwards.
- The hands to be straighten out at side.
- It is good for core and abdominal muscles.



WALL SQUATING EXERCISE:

- Place your exercise ball between the wall and the small of your back. Make sure you can just see the tips of your toes when you look down.
- Slowly sit down into a squat. As you squat,
- Remember that you should be able to wiggle your toes because all your weight should be in your heels. Strengthen thigh and buttocks muscle.



CHOSSING A BIRTHING BALL

When using a birthing or exercise ball during pregnancy, you'll want to choose the right one. Make sure that whatever ball you choose is burst resistant. This means that if it gets a hole in it, it'll slowly deflate rather than popping. You'll also want to choose a ball based on your height. In general, women under 5 feet, 2 inches will be most comfortable on a 55 cm ball. Taller women (over 5 feet 10 inches) will probably prefer a 75 cm ball. Everyone else will like a 65 cm ball. Always inflate or deflate the ball so that your knees are directly over your feet and at a 90 degree angle.

Safety Precautions

Always check in with your doctor before starting an exercise regime during pregnancy. When doing exercise ball workouts during pregnancy caution--your center of gravity is not the same and it is possible to fall off the ball and injure yourself. If you've never sat on an exercise ball, have someone help you the first few times you try it until you become comfortable.

Use your ball on a stable surface away from sharp objects. In addition, make sure your feet are bare or you're wearing non-slip shoes when doing birthing ball exercises to prevent injuries.

Effects of Swiss ball exercise :

The information in this article should not be considered medical advice. The information in this article is not meant to treat, diagnose, prescribe or cure any ailment. Always check with your physician before taking any products or following any advice you have read on Always consult your doctor before you start, stop or change anything that has been previously prescribed. Certain herbs and holistic remedies are unsuitable to take Strengthening your core muscles (abs, back, and pelvic floor) is important for sustaining a healthy pregnancy and successful labor.

Besides helping you push during childbirth, these muscles also maintain good posture, which can alleviate backaches and sciatica commonly associated with the later stages of pregnancy.

Some examples of strengthening exercises from the fitness experts at Ball Dynamics International, creators of FitBALL, to help you throughout all phases of your pregnancy: Here are some examples of strengthening exercises from the fitness experts at Ball Dynamics International, creators of FitBALL, to help you throughout all phases of your pregnancy:

DRY LAND EXERCISE :

1.TAILOR SITTING

- Sit on the floor and bring your left foot towards you so it touches your body .
- Bring the right foot but do not cross your ankles .
- Lean forward slowly until your knees touch the floor.sit this way,
- Back straight , knees almost touching the floor for a few minutes several times
- A day .this exercise should be started early in pregnancy .



The exercise helps to condition muscle of the inner thigh and pelvic floor that should be flexible during delivery of your baby . it also releases tension in the upper back .

2.PELVIC TILT

- Lie on your back with knees bent.
- Inhale through your nose and tighten your stomach and buttock muscles .
- Flatten the small of your back against the floor and allow your pelvis to tilt upward .
- Hold for a count of five as your exhale slowly .
- Relax , repeat.



This exercise is very important because it is the building block of good posture , Strengthens your abdominal and back muscles, and therefore decreases back strain and fatigue .

3.KEGELS EXERCISE :

- Squeeze the pubococcygeal muscle for five seconds .relax for five seconds, then squeeze again . at first do 10, five –second squeezes, three times a day.
- Flutter exercise : squeeze and release, then squeeze and release as quickly as you can.
- Work up to doing 100 kegels each day.

Kegel exercise tone the pubococcygeal muscle. This is the muscle use to stop and start the flow of urine. Exercising this muscle helps prevent hemorrhoids, supports your growing baby. Assists during and after labor, keeps the muscle of vagina toned, and sexual pleasure for both.

Learn to isolated this muscle by stopping the flow of urine a few times. Use this technique only to locate the muscle. Do not exercise the muscle this way as it may lead to urinary tract infection. Another way to locate the muscle is to put clean finger in the opening of vagina and tighten .

Kegel exercises help strengthen the muscles that support the bladder, uterus, and bowels. By strengthening these muscles during your pregnancy, you can develop the ability to relax and control the muscles in preparation for labor and birth. Kegel exercises are also highly recommended during the postpartum period to promote the healing of perineal tissues, increase the strength of the pelvic floor muscles and help these muscles return to a healthy state, and also increase urinary control. While doing Kegel exercises, try not to move your leg, buttock, or abdominal muscles.

4.SQUATTING EXERCISE :

- Move to the squatting position; knees over toes.
- Keep heels on the floor; feel the stretch in the back of your thighs.
- Hold for 20 to 30 seconds , gradually increase the time to 60 to 90 seconds.
- Relax head and arms throughout this exercise.
- This a good exercise to prepare for squatting during the pushing stage of labor.

5. PELVIC ROCKING EXERCISE :

- This exercise stretch the upper back muscles.
- Get on hands and knees with your hands directly under your shoulders and knees under hips
- Inhale deeply
- Slowly exhale while pulling the abdomen in and tightening the buttocks so your whole spine curls into a C . at the same time tighten the pelvic floor muscles.
- Relax, but keep your back straight.
- Repeat these steps eight times.



DATA ANALYSIS :

Statistical method used in this study was frequency, percentage, distribution, Mean, Standard deviation, Paired t test.

OBSERVATION AND DATA ANALYSIS

The separate perform was used to record the pre and post intervention score for each subject.

The dates collected were analyzed using these formulas.

PAIRED 'T' TEST

$$\text{Mean } \bar{d} = \frac{\sum d}{n}$$

$$\text{Standard Deviation (SD)} = \sqrt{\frac{\sum (d - \bar{d})^2}{(n - 1)}}$$

$$\text{Standard Error (SE)} = \frac{SD}{\sqrt{n}}$$

$$\text{Paired 't' test} = \frac{\bar{d} - 0}{SE}$$

INDEPENDENT 'T' TEST

$$\text{Standard Deviation (S)} = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

$$\text{Standard Error (SE)} = \frac{SD}{\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$\text{'t' critical value} = \frac{\bar{x}_1 - \bar{x}_2}{\frac{\sqrt{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2} * \frac{1}{n_1} + \frac{1}{n_2}}{n_1 + n_2 - 2}}$$

TABLE I

**DISTRIBUTION OF MEAN AND STANDARD
DEVIATION FOR GROUP I AND GROUP II USING
QUESTIONARY SCALE**

	Group I				Group II			
	Pre test		Post test		Pre test		Post test	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Pain and discomfort	5.8	1.98	19	5.58	7.3	2.60	26.1	2.21

TABLE I:

**DISTRIBUTION OF MEAN AND STANDARD
DEVIATION
FOR GROUP I AND GROUP II USING
QUESTIONARY SCALE**

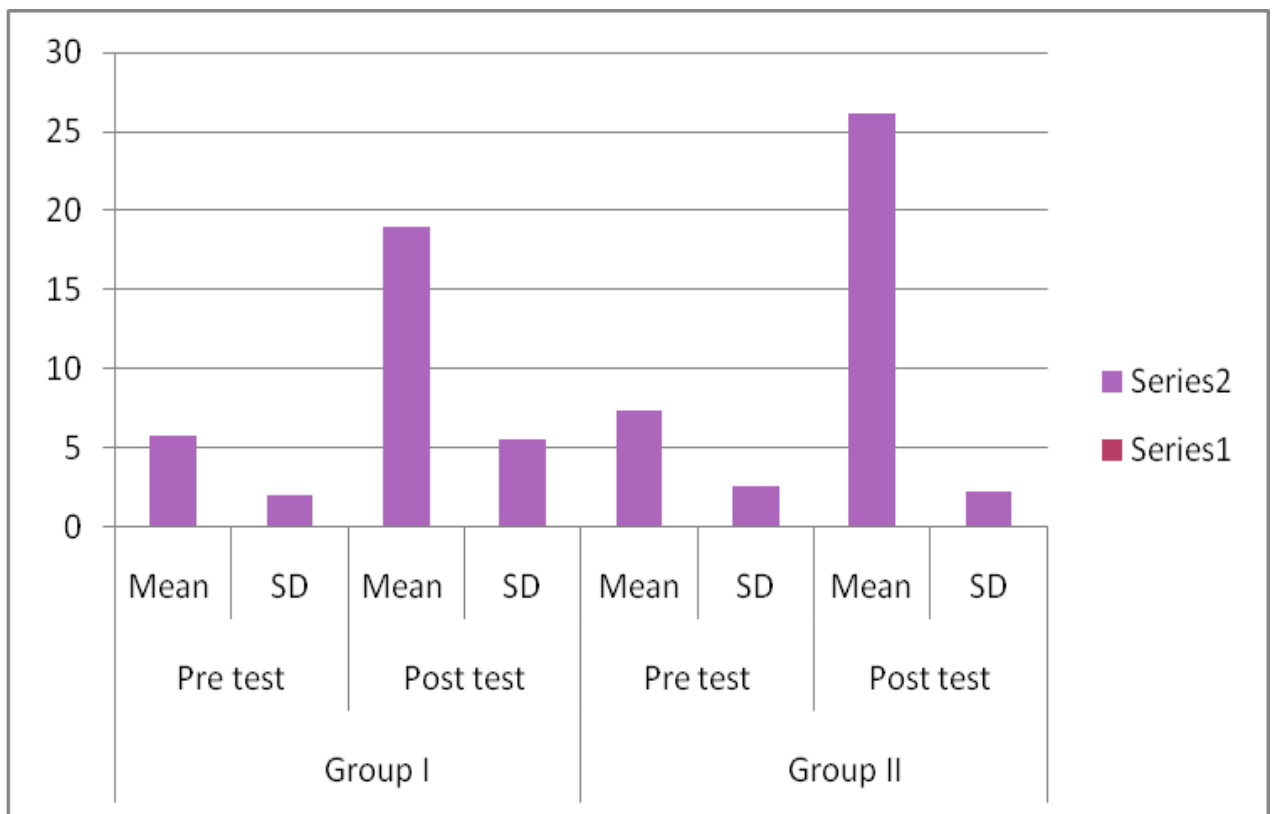


TABLE II

**OBSERVED CRITICAL RATIO VALUES FOR PAIRED
TESTS IN TWO GROUPS FOR PAIN AND DISCOMFORT**

Groups	variable	T calculated value	result
Group I Dry land exercise	Pain and discomfort	6.72	significant
Group II Swiss ball exercise	Pain and discomfort	10.82	significant

T table value = 2.262

This is significant at .05 level.

TABLE II

**OBSERVED CRITICAL RATIO VALUES FOR PAIRED
TESTS IN TWO GROUPS FOR PAIN**

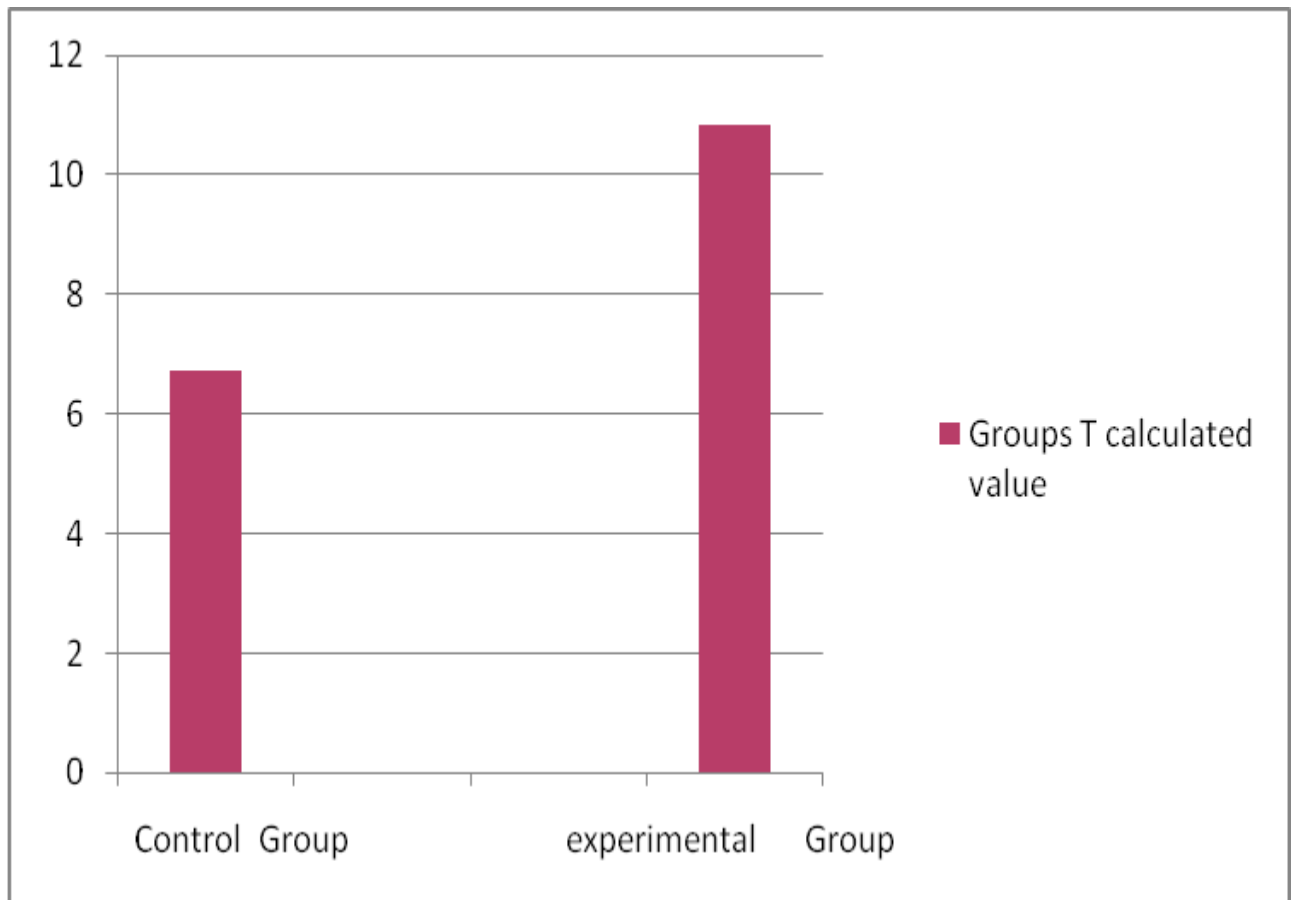


TABLE III

**OBSERVED CRITICAL RATIO VALUES FOR
INDEPENDENT TESTS IN TWO GROUPS FOR PAIN**

VARIABLE	t CALCULATED VALUE	t TABLE VALUE	RESULT
PAIN AND DISCOMFORT	3.81	2.101	SIGNIFICAT

This is significant at 0.5 level .

TABLE I

**DISTRIBUTION OF MEAN AND STANDARD DEVIATION
FOR GROUP I AND GROUP II USING
VISUAL ANALAGUE SCALE**

	Group I				Group II			
	Pre test		Post test		Pre test		Post test	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD
pain	7.5	1.5	4.5	1.5	8.7	1.1	1.1	0.83

TABLE I

**DISTRIBUTION OF MEAN AND STANDARD DEVIATION
FOR GROUP I AND GROUP II USING
VISUAL ANALAGUE SCALE**

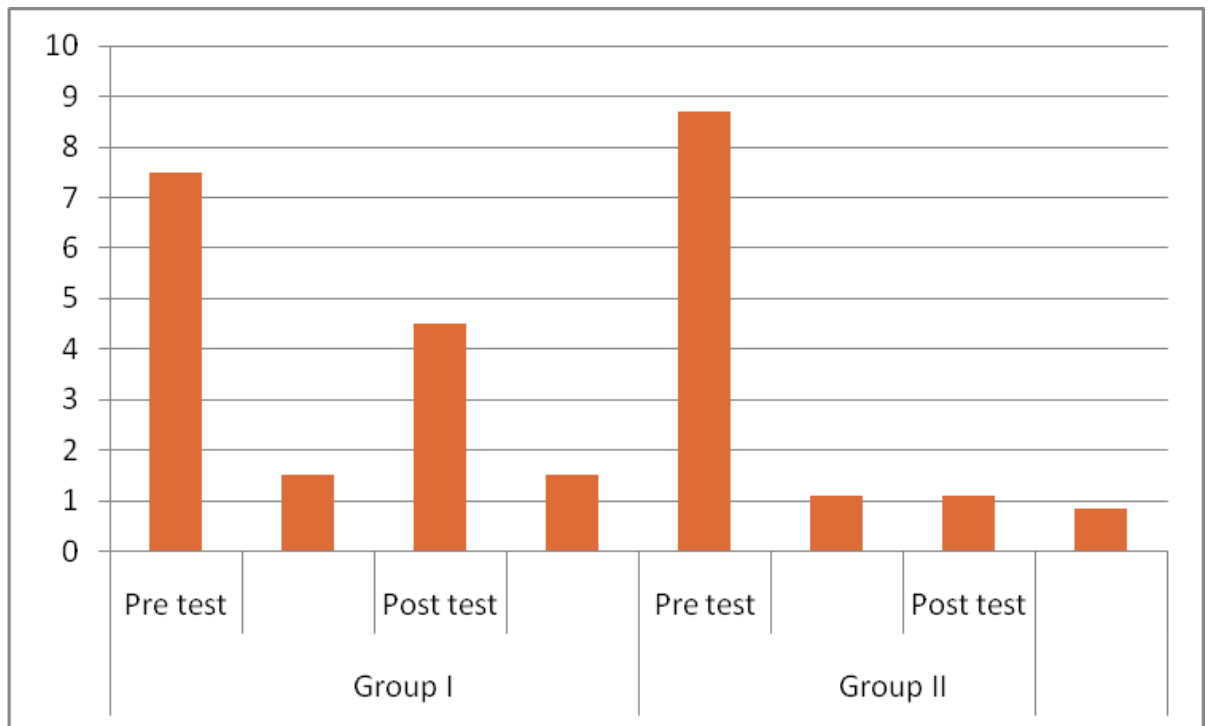


TABLE II

**OBSERVED CRITICAL RATIO VALUES FOR PAIRED
TESTS IN TWO GROUPS FOR PAIN AND DISCOMFORT**

Groups	variable	T calculated value	result
Group I Dry land exercise	Pain and discomfort	13.6	significant
Group II Swiss ball exercise	Pain and discomfort	17.67	significant

T table value = 2.262

This is significant at .05 level.

TABLE II

**OBSERVED CRITICAL RATIO VALUES FOR PAIRED
TESTS IN TWO GROUPS FOR PAIN AND
DISCOMFORT**

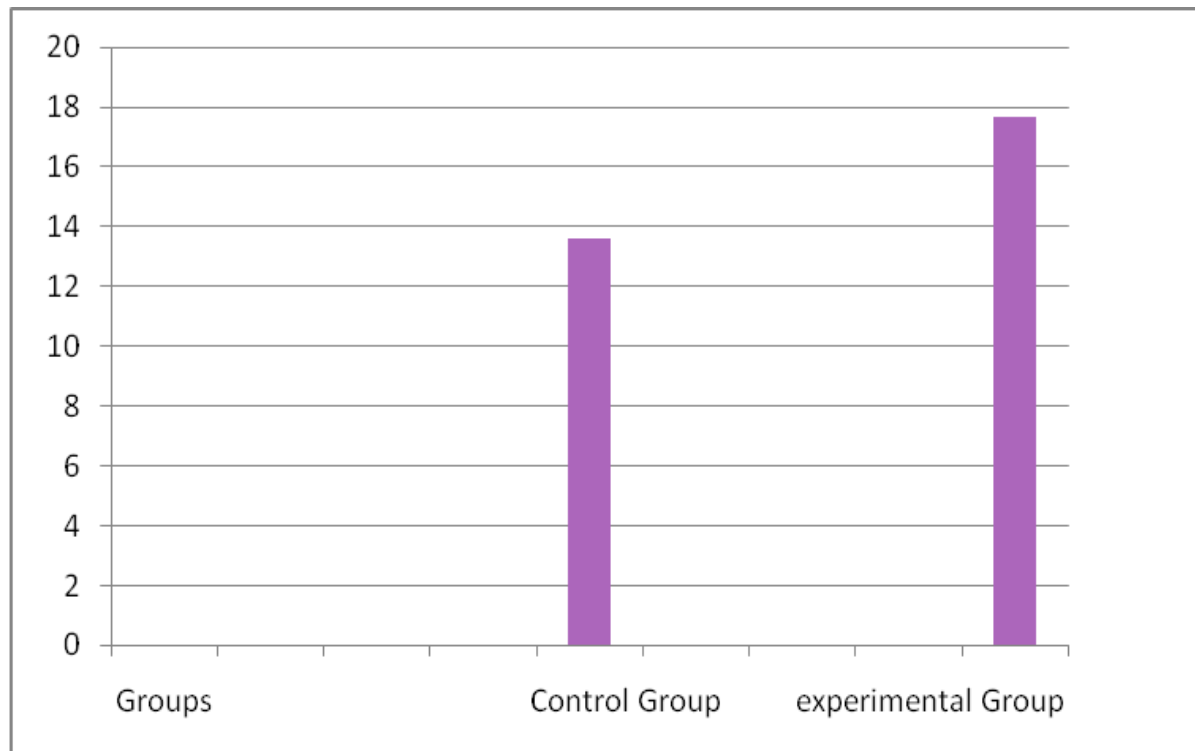


TABLE III

**OBSERVED CRITICAL RATIO VALUES FOR
INDEPENDENT TESTS IN TWO GROUPS FOR PAIN**

VARIABLE	t CALCULATED VALUE	t TABLE VALUE	RESULT
PAIN AND DISCOMFORT	6.29	2.101	SIGNIFICAT

This is significant 0.5 level .

RESULTS :

The result of the study supports the hypothesis . In Experimental group the prenatal women showed significant different in reduce pain and discomfort at spinal column.

The control group t value is 6.72, the experimental t value is 10.83 by using questionnaire scale. The calculated t value is 3.81.

The control group t value is 13.6, the experimental t value is 17.76 by using questionnaire scale. Then the calculated t value is 6.29.

The questionnaire scale and visual analyse results shows that experimental group people get reduce pain and discomfort more in control group.

DISCUSSION :

The result of the study supports the hypothesis . In Experimental group the prenatal women showed significant different in reduce pain and discomfort at spinal column.

It has also influence the practice of prenatal women of experimental group and control group . thus the result supports the hypothesis.

The pain reduce programme not only aims the physical being but also mental well being . prenatal women may experience stress, pain and discomfort during pregnancy due to various factors.

Swiss ball exercise help to reduce pain and discomfort at spinal column than dry land exercise .

The result of VISUAL ANALOGUE SCALE and QUESTIONARY SCALE support the hypothesis.

All the above results showed the importance of the swiss ball exercise help to reduce pain and discomfort at spinal column than dry land exercise .

CONCLUSION AND SUGGESTION :

Pain and discomfort at spinal column reduced by swiss ball exercise than dry land exercise for primipara mothers.

All the above results showed the importance of the swiss ball exercise help to reduce pain and discomfort at spinal column than dry land exercise .

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APPENDIX -I
PRENATAL ASSESSMENT REGARDING DRY LAND
EXERCISE AND SWISS BALL EXERCISE FOR PRIMIPARA
MOTHERS.

SECTION -A

Hospital Reg. No

Date:

Name

Age

Education address

Which Trimester

Relevant medical history

Previous level of activity

Prenatal complication

Any back pain

Any discomfort

Any postural deviation

Review date

- Pain scoring by Visual Analogous scale after exercise:
- Pain scoring by Severity scale after exercise:
- Problem List –
- Physiotherapy Management:
- Short Term Goals:
- Long Term Goals:

Declaration

I am willing to participate in this dissertation work conducted at
Meenakshi mission hospital and research centre, Madurai.

Doctors signature

Signature of patient

APPENDIX –II

STRUCTURED TEACHING PROGRAMME

Introduction

The exercise ball is an exercise treatment option for back pain sufferers and it designed to help to reduce low back pain. Exercise ball or swiss ball or physio ball help to strength core body muscle, stabilize the spine and enhanced proprioception provides the body with increased balance and stability. It help to reduce pain by stimulating the body to produce increased amount of natural pain inhibitors.

Effects of Exercise:

- Weight within healthy range.
- Improves balance posture and co-ordination.
- Increase strength and stamina.
- Reduce minor ailments of pregnancy.
- Helps post partum recovery faster.
- Better preparation for labour and delivery.

The information in this article should not be considered medical advice. The information in this article is not meant to treat, diagnose, prescribe or cure any ailment. Always check with your physician before taking any products or following any advice you have read on Always consult your doctor before you start, stop or change anything that has been previously prescribed. Certain herbs and holistic remedies are unsuitable to take Strengthening your core muscles (abs, back, and pelvic floor) is important for sustaining a healthy pregnancy and successful labor.

Besides helping you push during childbirth, these muscles also maintain good posture, which can alleviate backaches and sciatica commonly associated with the later stages of pregnancy.

Here are some examples of strengthening exercises from the fitness experts at Ball Dynamics International, creators of FitBALL, to help you throughout all phases of your pregnancy: Here are some examples of strengthening exercises from the fitness experts at Ball Dynamics International, creators of FitBALL, to help you throughout all phases of your pregnancy:

CORE STABILTY is compromised during during pregnancy due to

- Postural maladation because of increasing weight of foetus and uterus.
- Hormonal causes.

A large majority of pregnant population as much as 80 – 90 % will develop diastasis by their final trimester which can flare of if other conditions co- exist

Unless pregnancy and post partura women learn to exercise and use their abdominal muscle correctly, these complaints might plague their pregnancy and expended recoveries.

The missing link to abdominal strength and core integretity during pregnancy,post parturn recovery,is to recruit core muscles

In this presentation we will provide basic information regarding use of swissball (size,shape,texture,pressure)and important points to be kept in mind while during swiss ball.